ATOMIC ENERGY newsletter®

A SERVICE FOR INDUSTRY BUSINESS ENGINEERING AND RESEARCH
ROBERT M. SHERMAN, EDITOR. PUBLISHED BI-WEEKLY BY ATOMIC ENERGY NEWS CO., 1000 SIXTH AVENUE, NEW YORK 18, N. Y.

July 26th, 1955.
Vol. 13...No. 12

Dear Sir:

On a bid of $349,560.00, Foster-Wheeler Corp., N.Y., has been awarded a USAEC contract to design, construct and test a nuclear research reactor at the USAEC's Livermore Research Lab., Livermore, Calif. The reactor will be used by Univ. of Calif. (Radiation Lab.) for research it conducts at Livermore. (Unsuccessful bids, which ranged from $705,000.00 to $908,716.00, were made by Avco Man. Co. together with Vitro Corp. of America; Burns & Rowe, N.Y.; Fluor Corp., Los Angeles; Kaiser Eng., together with General Electric Co.; and North Amer. Avia., Downey, Calif.) (Other BUSINESS news, p. 2).

Chemical treatment of ores from Western France to extract uranium is to be undertaken by a new company formed for that purpose; the Societe Industrielle des Minerais de l'Ouest. Stockholders in this new company include the Etablissements Kuhlmann. Another organization to prospect for uranium in the mountains of Central France is the Societe d'Etudes et de Recherches pour l'Application Industrielle de l'Energie Nucleaire, formed by banks, mining and industrial companies. (Other RAW MATERIAL news, P. 5).

Simultaneous with the launching last week of the second U.S. nuclear propelled submarine, the Sea Wolf, at the Groton, Conn., yards of General Dynamics Corp., was the keel-laying for the third such craft. (The Navy has funds and authority for seven nuclear undersea craft; the Sea Wolf and the Nautilus, the first to be launched, are the beginning of this group of seven.) Heat exchanger medium in the Sea Wolf reactor is sodium; water was used in the Nautilus reactor for that purpose. Engineering for the Sea Wolf has been designed to minimize defects which have become apparent in the Nautilus, mainly trouble with the turbines, gears, heat exchangers and other machinery. (Other NUCLEAR POWER PLANT news, p. 2).

Application for a license to do nuclear fuel element fabrication for industry has now been made by Metals & Controls Corp., Attleboro, Mass., to the USAEC. The company, which is now operating a fuel element fabrication facility for military end use, intends to expand its operations to industrial reactors. (Other PRODUCT news, p .5).

To meet the growing need for engineers trained in nuclear applications, Cornell and Oklahoma A& M are both adding nuclear engineering to the curriculum next Fall. At Cornell, the school of engineering is offering a nuclear engineering option augmenting its regular five year undergraduate engineering course. At Oklahoma A & M, graduate courses in nuclear engineering are to be offered in a participation program with Argonne National Laboratory, Lemont, Ill.

Assets of Science & Nuclear Fund have now crossed the $500,000 mark, according to president Donald F. Bishop. Organized to invest in the nuclear and related scientific fields, it began business April 28, 1955, with assets of $118,000, all in cash. At the close of business June 24, 1955, the fund had increased by $394,000 to a total of $512,000.

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ATOMIC ENERGY BUSINESS REPORTS...

NUCLEAR-REACTOR-PRODUCED ELECTRICAL POWER PUT INTO LINES OF UTILITY:- Using the submarine nuclear reactor at Knolls Atomic Power Laboratory, West Milton, N.Y., as a heat source, electrical energy is now being generated and sold on a "when-available" basis to Niagara Mohawk Power Co., Syracuse, in the first commercial sale of such electricity. The reactor used is a prototype of the unit installed in the nuclear submarine Sea Wolf, with steam from the reactor driving a General Electric turbine-generator. General Electric Co. operates Knolls under a USAEC contract. Various G-E subsidiaries supplied the turbine-generator, and allied equipment; Bechtel Corp. constructed the turbine-generator portion of the plant. (The power is being sold to the utility at 3 mills per kwh., the so-called "dump rate" under which industrial concerns get rid of excess capacity to Niagara Mohawk, and therefore has no relation to the actual cost of producing it at West Milton. No data on the actual cost has been made available.) Three public groups have expressed interest in purchasing the power, but have been unable to secure a 75 mile transmission line from West Milton to their facilities: Delaware County Rural Electric Cooperative, Delhi, N.Y.; the City of Ilion, N.Y.; and the City of Holyoke, Mass.

LARGE NUCLEAR RESEARCH FACILITIES PLANNED:- New research laboratory facilities costing $10 million have now been approved by the directors of General Dynamics Corp.; they will be devoted primarily to nuclear research and development. John J. Hopkins, General Dynamics president, who revealed the company's plans in New York last week, said one of the main objectives of the new facilities will be to bring down reactor costs through simplified design and increased efficiency. Mr. Hopkins also said that Frederic de Hoffman, nuclear physicist, will be a vice-president and general manager of the corporation's general atomic division. Dr. de Hoffman joined the company last April when he became assistant vice-president for nuclear planning of the Convair division of General Dynamics.

INSURANCE GROUP MAKES REPORT ON REACTOR PROBLEMS:- A report just released of a preliminary survey by some 10 insurance executives of the problems involved in insuring private operation of nuclear reactors, made in cooperation with the USAEC, states that underwriters feel the catastrophe potential of nuclear reactors, although remote, is more serious than anything now known in industry. It points out that the insurance capacity for the physical hazards of chemical operations, at reactor plants, appears to be adequate. The insurers note, however, that insurance protection for loss of use, when applied to industrial atomic power, must be limited during the early period of development of such power. As to workmen's compensation and public liability, the insurers feel that standards normally applied to more hazardous industrial enterprises will adequately apply. The most serious problem, the insurers state, is in the field of third party liability insurance, since in the event of a catastrophe, claims might be made not only against the operator of a nuclear facility, but against the manufacturers of components as well.

NUCLEAR CONTRACT RECEIVED BY BRITISH BRANCH OF U.S. FIRM:- The United Kingdom Atomic Energy Authority has awarded contracts to Babcock & Wilcox, Ltd., 35 Farringdon St., London, E.C. 4, in connection with the expansion of Britain's nuclear power facilities. The new contracts cover eight steam towers, each 80-ft. high, at Calder Hall, Cumberland, which will be known as Calder Hall "B". (Babcock had supplied the steam plant for the original plant at Calder Hall.) Two other installations, totalling 16 towers, will be supplied to a nuclear power station at Chapelcross, near Annan, in Dumfriesshire, Scotland. (Four reactors are planned by the U.K. Atomic Energy Authority, at Dumfriesshire; Merz & McClellan, consulting engineers of London, are to collaborate in their design.)

BRITISH FIRMS POOL RESOURCES FOR NUCLEAR WORK:- The English firm of Head, Wrightson & Co., Ltd., has pooled resources with C. A. Parsons & Co., Ltd., Newcastle-on-Tyne, in a new corporation with authorized capital of £1 million for development of nuclear power plants. Parsons, an engineering firm, are now working on a plant for the atomic power station at Calder Hall. Head, Wrightson has been actively engaged in numerous UK atomic projects. (Another group formed to undertake nuclear power projects in England consisted of the English Electric Co., Babcock & Wilcox, and Taylor Woodrow. Although the group was formed last year, it was only officially announced in London last fortnight.)

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ATOMIC ENERGY FINANCIAL REPORTS...

INDUSTRIAL FIRMS IN ATOMIC FIELD SHOW DIVERSE EARNINGS PICTURE:- While first half (1955) earnings of General Electric Co. reached a record $101,892,000.00, or 9% over the like months of 1954, the earnings of Westinghouse Electric Corp. for all 1955 are being estimated by financial analysts at about $5.60 a share, against $5.06 a share last year. An analytical study, prepared by William Kurtz, of the New York brokerage house of Paine, Webber, Jackson & Curtis, lays the responsibility for the Westinghouse earnings decline to the price war last January and February of heavy utility equipment among G-E, Westinghouse and Allis-Chalmers, the "big three" in the industry. (All three firms are heavily engaged in various phases of nuclear work, with G-E's participation the greatest; its wholly-owned affiliate, Canadian General Electric, has also been steadily enlarging its nuclear activities.)

CANADIAN STOCK MARKETS DISTURBED BY OFFICIAL'S STATEMENT:- Although the Canadian Government has guaranteed up to Mar. 31, 1962, that it will purchase all uranium ores produced in Canada, Mr. C. D. Howe, Canadian Minister of Trade and Commerce said in the House of Commons last fortnight that "at the rate new discoveries are being made, how long we can continue in that position I cannot say". This was interpreted to mean special, rather than regular price contracts, because of this guarantee. As was to be expected, Canadian stock markets were depressed by this news. The "uranium index" of Easson, showed a loss of 50 points, in the weekly period following the announcement.

INVESTMENT TRUST AGAIN ACTIVE IN URANIUM MINING FIELD:- An option to purchase the outstanding stock of Almar Minerals, Inc., has now been acquired by Hidden Splendor Mining Co., a wholly-owned subsidiary of Atlas Corp., according to Floyd Odlum, president of Atlas. Almar has a 51% interest in the Daniel Ruddock ore body in the Big Indian mining district, as well as some 700 mining claims in various plateau areas. Officials said "several million dollars" were involved. The deal adds new properties to Atlas, whose portfolio shows uranium mining stocks to be its largest holdings, percentage-wise. (The holdings are in the United States, Canada, and Australia.)

ANALYSES AND REPORTS AVAILABLE:- Report to the stockholders of Minerals Engineering Co. (one of the five largest tungsten producers in the U.S., large holder of uranium properties, and contract drillers for uranium) by Blair Burwell, president, is now available from Taylor & Co., 105 S. La Salle St., Chicago 3, Ill. ..... An analysis of Lithium Corp. of America may be obtained from New York Hanseatic Corp., 120 B'way. ..... A report by Institutional Growth Fund, 19 Rector St., N.Y.C., shows some 38 stocks of firms doing nuclear work held by this Fund..... Investments in nuclear firms by National Securities & Research Corp., 120 B'way., N.Y.C., as of April 30, 1955, are shown in new prospectus available from this mutual fund.

RADIATION NEWS...

FIRST NUCLEAR REACTOR FOR MEDICAL PURPOSES TO BE BUILT:- A nuclear reactor specifically designed for medical treatment and research--the first to be so built--is to be constructed for the new medical center of the University of California at Los Angeles. North American Aviation's nuclear engineering division will build the reactor, which will be of the water boiler type operating at a power level of about 5 kilowatts of heat, with a maximum power of 50 kilowatts. The neutrons and gamma rays which the reactor will produce will be used in treating deep-seated cancers. (This use of neutrons, in conjunction with certain injected chemicals, for the treatment of cancerous tissue growth, is superior to the use of X-rays and other types of radiation therapy, according to Dr. Stafford L. Warren, dean of the U.C.L.A. medical school. He explained that a more selective absorption occurs, with less damage to the surrounding healthy tissue.)

RADIATION REGULATION STANDARDS ESTABLISHED:- A regulation setting up standards for protection against radiation hazards has now been established by the USAEC and will apply to all those who have a general or specific license from the USAEC for the use of source material, special nuclear material, or by-product material, for nuclear reactor or other purposes. The regulation gives maximum permissible limits on exposure to external radiation and concentrations of radioactive material, as well as setting up controls over the release of radioactive material from licensed facilities. Waste disposal, protective masks and clothing, storage of licensed material, and other requirements for licensees are covered in other provisions of the regulation.

PRESENT STATUS OF ATOMIC POWER IN THE UNITED STATES:- A special condensation of remarks by Louis H. Roddis, Jr., deputy director, division of reactor development, USAEC, at North Carolina State College, July 18, 1955.

In 1947 there were probably not over 50 people working on the problems of atomic power in the United States. Today, in 1955, we find over 5,000 scientists and engineers working on atomic power problems, either for contractors of the USAEC, for the Armed Services, or for private capital. (If this seems large, it is in contrast to the chemical industry with over 10 times as many, or the electrical industry with over 20 times as many people working.)

In comparing atomic power in 1947 with 1955, we find that what was a scientific theory in 1947 has now been actually demonstrated in several ways. Military power reactors are today a reality.

It is important to note, however, that no power reactor now operating in the U. S. is in itself economic, nor were any of them expected to be, since they were either for experimental or military purposes.

The question then becomes: How far are we away from the goal of economic nuclear power? The only real answer is that no one knows the true costs of atomic power today. I have seen situations in the last year where pieces of equipment for nuclear plants were ordered on a firm price basis, where the high bid was 7 times greater than the low bid, and where the low bid was 5 times lower than the engineers' estimate. Furthermore, the low bidder in this situation stoutly maintained that he would not lose money on this job. When responsible firms are making bids which vary so widely, it seems obvious that estimates of the costs of a complete plant which includes these components are also going to fluctuate widely. Other factors which are subject to "educated guessing" include operating costs, fuel element life, plant reliability, and size of the required labor force.

If the economy of nuclear power is such an unknown, what is being done?

First, the USAEC is vigorously continuing the military reactor programs which have already contributed significant items of technology to the civilian program.

Secondly, the USAEC is building new experimental reactors to prove out specific and new types of reactors.

As a third item, the Commission is maintaining a vigorous experimental program on fuel element processing and fabrication; irradiation testing; experimental reactor physics; waste disposal; reactor safety; and other problems relating to the entire atomic power industry as a whole.

All of these steps, however, will not give us economic commercial atomic power. We must also build full-scale units and operate them, because engineering and economic estimates must be based on substantially full-scale experience.

In the most important area of constructing full-scale central station power plants, private financing appears to be entering the picture. In the last year or so six units have been proposed or started. The first is the pressurized water reactor, a combined USAEC-Duquesne Light Company project at Shippingport, Pa. The second project is a privately financed nuclear power reactor based in large part on the same pressurized water technology of the Nautilus (nuclear submarine) on which the Duquesne reactor is based. This is the Consolidated Edison plant, to be erected near New York City. The four other proposed large-scale units are still under consideration by the USAEC: (1) Commonwealth Edison Co., acting for a combine known as the Nuclear Power Group; (2) A group of companies headed by the Detroit Edison Co.; (3) Yankee Atomic Electric Co., representing a combine of New England power companies; and (4) The Consumers Public Power District of Columbus, Nebraska.

These six big full-scale plants, including the rather significant variations between the pressurized water proposals, really represent six distinct types of reactors. If all are built, we can expect, by 1960, to know on a reasonably firm basis what the true construction costs were of each of these six types of reactors. We should also know by then, or shortly thereafter, what their actual power capability is and therefore have some firm figures for the capital costs of such large plants. The future trend of civilian power plant construction, after about 1962 or 1963, will depend most heavily upon the economic success of these first large scale units.

NEW PRODUCTS & INSTRUMENTS...for nuclear lab & plant...

SCINTILLATION DETECTOR:- A scintillation detector large enough to accommodate a human body and to measure its accumulated amount of radioactivity has been developed and constructed at Los Alamos Scientific Laboratory, Los Alamos, N.M. At the Laboratory (which is operated under a USAEC-contract by the University of California) the detector has been used to measure the amount of radioactivity naturally present in the body, as a means of determining how much radiation exposure is permissible without damage. The scintillation detector is a large cylindrical tank, six feet long and 28-inches in diameter. Through it runs a cavity large enough to contain the human subject to be measured. The walls of the tank contain the scintillating liquid. Some 108 photomultiplier tubes are used to detect and amplify the scintillations produced. A ten ton lead shield surrounds the tank to reduce interference from external radioactivity.

NEW PATENTS ISSUED:- Cyclotron target box cooling means using liquid nitrogen to cool a flow of helium. U. S. Pat. No. 2,712,223 issued July 5, 1955; assigned to United States of America (USAEC). (Inventors: C. A. Hunt and H. P. Yockey.)

Short circuit eliminator used in electromagnetic isotope separating apparatus. U. S. Pat. No. 2,712,636 issued July 5, 1955 (application made April 12, 1945); assigned to United States of America (USAEC). (Inventors: J. W. Litton and R. F. Krueger.)

Reducing the pyrophoricity of uranium hydride powder, by bringing into contact with the powder the vapor of an aliphatic amine. U. S. Pat. No. 2,712,979 issued July 12, 1955; assigned to United States of America (USAEC). (Inventors: T. R. P. Gibb, Jr., and W. H. Pasfield.)

NEW BOOKS, FILMS & OTHER PUBLICATIONS...on nuclear subjects...

Nuclear Notes for Industry; issue of July 7, 1955. List of current USAEC reports on technology. --USAEC, Tech. Info. Serv., Oak Ridge, Tenn. (n/c)

Methods for Examination of Water, Sewage & Industrial Wastes. A film showing applications of this firm's filters. --Millipore Filter Corp., Watertown 72, Mass. (On n/c loan.)

How Will Atomic Power Affect the Electric Power Industry?. By E. E. Morehouse and T. Baumeister. Reprint from Land Economics. --General Public Utilities Corp., 67 Broad St., New York, N.Y. (n/c)

RAW MATERIALS...prospecting, mining & marketing...

UNITED STATES:- Rare Metals Corp. of America of El Paso, Tex., has now received a contract from the USAEC to construct and operate a uranium ore-processing plant at Tuba City, Ariz. Rare Metals will own the plant, process uranium ores, and sell the output to the USAEC, according to terms of the contract..... Western Gold & Uranium, Inc., has now acquired 62 uranium claims, of which 54 are in Utah and 8 in Colo. Payment was half in cash and half in Western stock plus a 10% royalty.

CANADA:- At the Beaverlodge, Athabaska, property of Consolidated Nicholson Mines production of uranium ore continues on a "very satisfactory basis" company stockholders have now been advised. The firm states that the total value of uranium ores extracted in the 4½-month period to June 15, 1955, is estimated at $215,000.00, while operating costs are said to average $16,000.00 per month.....Application has now been made by Bicroft Uranium for sale of concentrates (produced from the company's properties at Bancroft, Southeastern Ontario) to Eldorado Mining & Refining. Diamond drilling is continuing meanwhile; this is adding to the ore reserve picture, company officials state.

SPECIAL U.N. REPORT...International Conf., Atomic Energy Uses...

PAPERS SCHEDULED:- The program schedule for the U.N. atoms for peace conference, opening in Geneva Aug. 8th, now shows 66 participating governments, with 422 papers to be delivered in the 12 days of the conference. Largest number will be presented by the U.S., with the U.K., and U.S.S.R., second and third respectively. (The large volume of material will make the printed record of the conference more useful than actual attendance, observers feel.)

Sincerely,

The Staff,
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